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SCIENCE NEWS LETTER

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DETROIT

THE WEEKLY SUMMARY OF CURRENT SCIENCE •

August 22, 1942

Rubber Twins

See Page 119

A SCIENCE SERVICE PUBLICATION

Do You Know?

A process for condensing *apple juice* into a syrup with a sugar content ranging from 65% to 70% has been announced by the Department of Agriculture.

Important to the manufacture of navigation instruments is a new *"invisible glass,"* glass treated to improve its light transmission characteristics by as much as 100%.

A cow doesn't even have to eat *garlic* to get the flavor in her milk—she need only smell it steadily for 10 minutes, according to the Department of Agriculture.

The Wisconsin river gorge was cut by a giant *serpent,* which battered its way down from the north country through masses of solid rock, according to an Indian legend.

To preserve *garden hose,* protect it from oil; use the shut-off nozzle to stop flow (never kink it); do not hang hose on nails; store it in a dry place, away from direct sunlight.

Shatterproof properties are imparted to ordinary window glass by the application of a new transparent, water-white liquid, which adheres in a thin coat, according to the manufacturer.

The Eastern refining plant of one oil company has converted its *furnaces* to burn coal, releasing 550,000 gallons of oil a year to war industries unable to convert their own power plants.

Question Box

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Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

The poisonous *water hemlock,* called variously snakeweed, cowbane, and white snakeroot, is a deadly hazard to cattle pastured in swampy areas.

A trained force of *mosquito fighters* is helping public health officials in finding and eliminating mosquito breeding grounds near Army cantonments.

Hunting of *snow geese* in parts of Idaho and Montana is prohibited, to protect the rare trumpeter swan, sometimes mistaken for the snow goose.

A semi-plastic material, tailor-made for the purpose, is substituting for rubber in *flexible hose* needed to feed gas to intensely hot fires in one war industry.

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PUBLIC HEALTH

Plague To Follow War

Epidemics of tuberculosis, malaria and other ills seen as serious postwar problem in League of Nations report. Must be combated by an international organization.

➤ PLAGUE and pestilence, which follow every war, will have to be combated by an international organization such as the League of Nations, reports Sean Lester, Acting Secretary-General of the League.

Smallpox, cholera and typhus were prevented from spreading westward after the last war by the League's Epidemics Commission, which in 1921-1922 established a chain of quarantine stations in eastern Europe.

Malaria will be a serious problem in southern Europe, Africa and the Far East unless the Malaria Commission, "which has earned for itself worldwide authority, once more plays its part as adviser to national health administrations," the League of Nations report predicts, after studying the problem.

An increase in tuberculosis has already been observed in England, a notable exception to the general improvement in British health. The League report predicts a general rise in tuberculosis everywhere, due to the industrial effort required for the duration, coupled with food shortage.

"It would be desirable for the Tuberculosis Commission to undertake a revision of the guiding principles enunciated in 1932 . . . with due regard to new methods of treatment and detection. These remarks apply equally . . . to venereal diseases."

The report urges that the League of Nations be permitted to resume and increase its public health activities "as soon as the international situation permits."

In this country the report is being made available by the International Documents Service of the Columbia University Press.

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***TOTAL MOON ECLIPSE** on Tuesday, August 25, will be visible in its entirety over most of the United States. Beginning at 10:01 p.m. EWT, the earth's shadow will start to nick the edge of the moon and one hour later the entire moon will be in shadow, as shown in the diagram prepared by Fels Planetarium. By 1:35 a.m. the eclipse will be over. The moon will continue to be dimly visible during the eclipse as some of the sun's rays are bent as they pass through the earth's atmosphere so that they reach the moon despite the fact that the earth is lined up between the sun and moon.*

MEDICINE

Kidneys Regulate Fatty Substances in the Blood

➤ KIDNEYS HAVE a hitherto unsuspected function in the normal physiology of the body: they regulate the concentration of fats and related substances in the blood. This discovery, announced by Dr. Walter Heymann of the Western Reserve University School of Medicine (*Science*, Aug. 14), was made as a result of experiments on laboratory animals, in an effort to find an explanation for abnormal quantities of fatty substances in the blood of children afflicted with a kidney disease.

The animals in the experiments were surgically deprived of their kidneys. In all cases, removal of one kidney was followed by a steep rise in concentration of chemical compounds related to fats, followed by a slow return to approximately normal conditions. Then when the other kidney was taken out, a second steep rise in concentration occurred.

Dr. Heymann states his conclusions cautiously: "The tubular apparatus of the kidneys of dogs possesses a regulatory influence on the blood lipids such as has hitherto been unknown and is still unexplained. It is probable that the human kidney exerts the same function, but this has not yet been proved. A disturbance of this function would explain the hyperlipemia observed in nephrosis better than any hypothesis thus far advanced."

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CHEMISTRY

Registry of Rare Chemicals To Show Sources, Amounts

➤ A NATIONAL registry of rare chemicals, chemicals too rare to be listed by the regular supply houses, has been established by the Armour Research Foundation, Chicago. The chemicals will not be stocked, but an indexed file will show sources and amounts available. Such chemicals are often needed by research chemists who must spend much time trying to locate them or else must produce them in their own laboratories.

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METEOROLOGY

Storm Danger Greater

War prevents the collection of radio warnings from ships in the Caribbean before they reach port. Special precautions are being taken by Army and the Red Cross.

➤ HURRICANE danger in Gulf and Caribbean regions is increased this year because of the radio silence imposed on ships at sea by the submarine menace.

In pre-war times, ships' reports of their encounters with these violent storms gave warning of their approach long before they reached the land. Now, the only radio reports that can safely be made are those from West Indian islands—which can't be torpedoed and hence have no need to fear giving away their positions by use of their wireless.

With the number of Army camps, flying fields and Navy stations greatly increased in the South, and especially in Florida, most exposed of all states to hurricanes, special precautions are being taken by military authorities, and particularly by the Red Cross, to guard against storm damage, and to be ready to move swiftly to the relief of any locality where a hurricane might strike. The civil population in the meantime is being advised to "get set" by putting houses, and especially roofs, into good repair, by laying in lumber and tools for boarding up windows if storm warning comes, and by preparing to store drinking water, food, and other emergency supplies.

There are some curious hurricane "signs" believed in by commercial fishermen. When bottom fish like channel bass, sheepshead and porgies swallow pebbles, they say they are taking on ballast to hold them down when the big blow comes. They also claim that big land-crabs move from their holes near the water's edge toward higher land when a hurricane is due. Seminole Indians believe that if sawgrass blooms a big wind is coming in 90 days. Thus far this season, all these "signs" have failed to appear, at least along the Florida east coast.

Hurricanes (and their China Sea counterparts, typhoons) could very easily play a major part in the naval warfare now raging in all the tropic seas. While warships, even small craft like destroyers, are strongly enough built to battle their way through severe tropical storms, they cannot possibly fight during one of them. Airplane carriers will remain afloat all right, but they cannot launch their planes.

Safest of all craft, during a hurricane, is a submarine. Even the most violent waves are not felt, a few fathoms down, so all a sub needs to do is dive and wait the storm out. Torpedo-damaged tankers, merchant ships or transports, trying to make port, on the other hand, will have their chances of survival gravely diminished.

Ships in harbor are frequently in more danger during a hurricane than ships at sea. Docks and shore installations may be wrecked by either wind or by tremendous waves sent surging up the beach. Both we and our enemies are equally in danger from these storms. Tempests play no favorites.

Japan, and lands now held by the Japanese, are especially exposed, however, to typhoons. Hardly a year goes by without typhoon damage somewhere on the Japanese islands themselves. Sometimes it is only a fishing village or two that gets battered and drowned; sometimes the storm's wrath is wreaked on a major city, its waterfront warehouses and its shipping.

By whatever name they are known—hurricanes in Caribbean-Gulf regions and in parts of the Pacific, typhoons in Far Eastern waters, cyclones in the northern Indian ocean—they are all the same kind of tropical storm. They are generated in the heated, stagnant belt air near the equator known as the doldrums. Once in a while an area of this heated air starts rising like an enormous bubble from the bottom of a pot. The earth's rotation indirectly sets it spinning—and a hurricane is born. It drifts toward the west, and away from the equator, and may finally sweep up the whole eastern coast of this country, as did the New England hurricane of 1938, or even swing out over the North Atlantic and finally blow its last breath out over Britain and northwestern Europe. Typhoons follow similar courses, ravaging the coasts of China and the Japanese islands.

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PUBLIC HEALTH

Motor Health Menace

➤ A MECHANIZED, motorized Army brings new health menaces to the soldier besides the old Army health hazards of infectious diseases. Deaths from accidents in the Army are not high, but are about equal to death rate from disease.

To meet the new health hazard, a special section on industrial hygiene has been organized in the Office of the Surgeon General. This section supervises health conditions in such of our war industry plants as are owned and operated by the federal Government, in addition to devising measures for protection of soldiers in the mechanized Army.

One of the big jobs of industrial hygienists in civil life is to keep up with new manufacturing processes and new chemicals used in industry, to determine their possible menace to health and to devise protection against such new menaces as are found. New processes and chemicals used in war industries are military secrets but the Army's industrial hygiene specialists are undoubtedly told enough about them to devise any special protective measures that might be needed.

No special secret is the fact that men in tanks are exposed to unusual conditions of heat, fatigue and exhaust fumes which might be harmful. Special research on this problem is now under way to determine what if any health danger exists, and how it can be prevented.

Traffic accidents are a problem to the Army as well as in civilian life. But the lad who used to drive his old "jalopy" around corners at neck-risking speed is taught safe driving practices in the Army before he gets his hands on the wheel of a jeep.

Mechanics who keep the tanks and jeeps and other vehicles in good order are also taught, if they have not already learned, safe methods of handling tools and machinery.

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One thousand *plywood lifeboats*, the first of their kind ever built, are now in production.

NURSING

Army Needs Nurses

Recruits from ranks of those soon to finish their training or already practicing are preferred. Much action but little glamor in store for those who ease suffering.

➤ THE ARMY needs nurses now, just as it needs doctors. The nurses must be recruited from the ranks of those already trained or soon to finish their professional training. Meanwhile the need for professionally trained nurses for industry, for civilian patients and for health departments continues. Girl graduates from high schools this summer may well consider nursing among other careers they may follow. They should, however, consider it most carefully, finding out all they can about what is required of a nurse and what a nurse's training is like.

The nurse-stewardesses of the airliners and the glamorous women-in-white of moving pictures have built in the mind of many a young girl a view of nursing that is more romantic than factual. Nursing is hard work with little glamor but with plenty of action, some drama and the kind of satisfaction that comes from knowing that one has helped to ease suffering and to restore health.

The ideal nurse, says Miss Blanche Edwards, director of nurses at Bellevue Hospital, New York City, is "intelligent, fond of people, well grounded in sciences, healthy, personable—and willing to work like a horse."

The girl who has those qualifications has what it takes to make a nurse if she wants to follow nursing as a career. Don't feel that just because you did not spend your time as a child playing nurse to your dolls and all the sick pets and cut fingers in the neighborhood, you won't be a good nurse. That old idea that good nurses are born, not made, is debunked in a new book for girls considering nursing as a career, DO YOU WANT TO BE A NURSE? (*Doubleday, Doran*) by Dorothy Sutherland, editor of a magazine for nurses.

Years ago, she points out, when women with specific nursing education were few and far between, people generally had to depend on "intuitive" nurses. Today this apparently inborn ability to care for the sick is only one of many attributes of the registered nurse. Today success in nursing depends to a large extent on factual knowledge and the ability to use it.

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In 1939, some 80,000,000 pounds of *starch* were dry roasted and used in the manufacture of corrugated cardboard.

***INFRA-RED REFLECTING** paint developed by the Arco Company is effective camouflage. Picture at left shows the easily visible reflection from an important scientific laboratory painted with ordinary aluminum paint. The same building is shown center, painted with the camouflage paint. The structure blends with the surrounding foliage, making a difficult target for a bomber which must sight at a distance of 12 miles. Infra-red picture on the right, such as those sometimes taken in military reconnaissance, shows that the special paint shows up just as white as all natural foliage. The ordinary olive-drab with which it was formerly painted would appear black in an infra-red photograph. The infra-red reflecting paint also throws off most of the sun's heat rays which would normally be absorbed—an important factor in certain types of defense buildings.*

MEDICINE

Prevent Airsickness

How the combat pilot avoids that pea green feeling. Illness from aerial acrobatics called a serious deterrent to progress. Preventive methods are effective.

➤ HOW THE combat pilot can do loops, spins, Immelmann turns, wingovers and other combat maneuvers without getting airsick is told by Lieut. T. T. Flaherty, of the U. S. Navy Medical Corps (*United States Naval Medical Bulletin*).

Airsickness usually hits the aviation student below the belt for the first time while he is learning aerobatics, Lieut. Flaherty found, and it may be "a serious deterrent to progress" unless it is properly treated. Out of an average of 18 students a month treated for airsickness at one air station, only five were dropped from training for this reason and of these only one had followed the prevention rules offered by Lieut. Flaherty.

Here is what you should do on your next wingover if you want to avoid that pea-green feeling:

1. Adjust the seat to a high position for maximum visibility, being careful, however, that this does not interfere with full throw of the rudder paddles.

2. Fasten the safety belt firmly, thus minimizing "bouncing" and going a long way toward making plane and pilot one, even as the good rider makes himself a part of the horse.

3. Refrain from staring at the instrument board. Rather, you should keep your eyes out of the cockpit as much as possible.

4. Most important, pick out some point of reference—a sort of guidepost—a long way off. In loops, spins, Immelmann turns, wingovers and other maneuvers, keep your eyes off the nose and wings of your plane. Take a straight stretch of roadway, fence line or even a point on the horizon as an alignment guide. Most students who became airsick during wingovers spent a great deal of time looking in the cockpit at the airspeed meter, and the "needle and ball" indicator, literally flying mechanically by instruments with no points of reference on the earth's surface ever being used. In snap rolls, a point of the horizon or a cloud bank could be taken as a point of reference. This point can be followed during the maneuver and the student will know his position throughout the roll.

5. Avoid executing the same acrobatic over and over as this tends to cause airsickness to a far greater extent than if you vary them, and to wait a short interval between different acrobatics.

6. Never attempt a landing if extremely airsick, remaining at a reasonable altitude in level flight until the spell is subsided.

"Airsickness in most students during acrobatics is caused by their poor orientation in space," the naval surgeon concludes. "Airsickness can ordinarily be overcome when a student becomes oriented in the air by using his eyes to pick up points of reference on the ground."

Dancers, he pointed out, prevent dizziness by focusing momentarily on a certain point in the audience or on the wall as they complete each revolution in a whirl. In motoring, it is generally the back seat passenger who becomes carsick, not the driver, because the latter's attention is riveted to the road.

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EDUCATION

Whistle To Learn Code

➤ YOU FORGET all about dots and dashes and learn to whistle as the first lesson in learning radio code, according to the best modern method contained in a handbook by John Huntoon (*American Radio Relay League*).

The dots and dashes are outmoded devices for writing down code signals and have no place in modern radio sending or receiving, the book says. Learning code consists of knowing a sound language, tapping it out on a key, or recognizing it as it comes in on a headset.

You whistle to duplicate the high-pitched audio sound used in code transmission if you are learning the code at home and when you are practicing it. You don't need to carry a tune, for the whistling is all done on one note—the C above middle C on the piano.

But if melody is lacking in this sound language, rhythm is important. You practice this first. The short signals—the dididididits—should sound like a blast from a machine-gun; staccato, evenly-spaced, precise. The long signals—the dahdahdahs—are legato and continuous, smooth and full.

The alphabet is taught in short groups with the difficult and easily confused signals mastered first. The familiar dididitdah for victory is in the third group. But you are not supposed to look at the book and learn the letters with your eyes. instead you are urged to find some helpful friend to act as instructor and have him whistle the lessons to you.

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EDUCATION

Phonograph Records Cut Week from Course in Code

➤ ABOUT A WEEK is cut off the time required to learn to send or receive international radio code through a new method of instruction developed at the psychology department of Columbia University by Prof. Fred S. Keller, an announcement by the University indicates.

The lessons, which are on phonograph records, are the result of experiments in speeding up the training of soldiers at Fort Monmouth, New Jersey, to meet the acute need for radio operators. The system is now being used at Camp Edwards, Mass., and at civilian training centers at Columbia University and elsewhere.

An aspect of the new training plan is that the signals are graded for difficulty and the hardest ones are learned first. The student thus is encouraged by finding his work becoming easier as he goes along. Another feature is that the words are pronounced on the records with the code signals for those words. This corrects the students as soon as any error is made in recognizing the code signal and prevents repetition of errors.

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Modern England, apparently because of her climate, is free from *termites*, although fossil records show that these pests existed there in past ages.

BOTANY

Rubber Trees Split

Two seedlings from one may double yield from rubber plantings. Plants are cut by Gambar method, resulting in "siamese twins" attached to seed-leaves.

See Front Cover

➤ MAKING two rubber trees grow where only one grew before, by splitting Hevea seedlings just after they have sprouted, is the newest step toward the solution of the natural rubber problem reported by scientists of the U. S. Department of Agriculture (*Journal of Agricultural Research,* July 15). The technique offers the possibility of doubling the yield from the limited, therefore doubly precious, supply of high-quality pedigreed seeds available for the establishment of rubber plantings in the Western Hemisphere tropics.

Hevea seedling-splitting was first developed by Dutch plant scientists, working on the great plantations of the Netherlands Indies. Their methods have been tried out, with variations that may produce improvements, by H. F. Loomis of the Bureau of Plant Industry, at the U. S. Plant Introduction Garden at Coconut Grove, Florida.

Seedling-splitting in Hevea depends on the early growth habit of the plant. The rubber-tree seed looks like an oversize castor bean—Hevea is, as a matter of fact, a botanical relative of the castor bean. Only, when sprouting takes place, the thick seed-leaves or cotyledons are not pulled out of the seed-coat but remain in it, feeding the young plant for a time through the leaf-stems still attached to the shoot.

The first method of multiplying rubber plants by dividing them consisted simply of splitting the whole seedling into equal halves, from shoot-tip to roots, a few days after germination. The split halves of the shoot soon died, but new shoots came from a pair of tiny buds in the angles between the seed-leaf stems and the original shoot. This method, first described by a Dutch botanist named J. C. Zweede, was called the Ramaer method, after the botanist who invented it, R. Ramaer.

Later, an improvement was made on it by another botanist, but it was named not for a person but for a plantation, the Gambar Estate, near Malang, Java. In the Gambar method, the split is not into equal halves, but the cut is made into the side of the shoot, just above the junction with the seed-leaf stems. This leaves the original shoot to grow up, while a new one forms from the bud on the "short" side of the cut. This gives quicker growth to one side, because the original shoot does not die as it does in the Ramaer method. The new shoot that forms on the other side grows just about as well as it does under the Ramaer technique.

In both methods, the split seedling halves are still "siamesed" together by their attachment to the seed-leaves held firmly within the seed-coat. They grow side by side in flower-pots until they are big enough to separate and set out separately.

In an effort to eliminate this operation, Mr. Loomis tried carefully cracking the seed-coat and separating the seed-leaves at the time of the splitting. This eliminated the labor of later repotting, but this saving was offset by the death of some of the seedlings.

Mr. Loomis also discovered that young seedlings growing in the open, with their tops killed by cold or eaten off by rabbits, could be split and replanted successfully after they had started new shoots from the side buds. Studies on this method, however, have been very few, and must be carried further before any recommendations as to possible practical application can be made.

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TECHNOLOGY

Pack Eggs in Cellophane To Save Metals for War

➤ FROZEN EGGS are now packed in rectangular cartons lined with a special cellophane, instead of in the old round tin cans which weighed two pounds apiece. Estimates are that 350,000,000 pounds or 3,430,000,000 eggs will be frozen and shipped in 1942 to Americans and our allies. If all of these are packed in cartons instead of cans, nearly 12,000 tons of steel and tin will be saved for other war purposes. The cartons can also be used for other foods, for pie fillings, oleomargarine, jellies and various frozen and dehydrated foods, with further savings of metals.

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***TWENTY-FOUR DOZEN EGGS** are shown being stripped of their du Pont cellophane wrapping. After being churned to a homogenous, smooth mixture, the eggs are poured into the bag supported by a cardboard box and then frozen.*

SEISMOLOGY

Report Quake Epicenter Near Coast of Guatemala

➤ THE VIOLENT earthquake reported from Central America on Friday, Aug. 7, had its epicenter near the coast of Guatemala, seismologists of the U. S. Coast and Geodetic Survey stated after comparing records telegraphically transmitted through Science Service by nine American and Canadian observatories. Approximate location was in latitude 14 degrees north, longitude 91 degrees west. The shock began at 7:36.9 p.m., EWT, on the sixth.

Stations reporting were: Dominion Observatory at Ottawa, Des Moines Seismological Observatory, the observatories of the Jesuit Seismological Association at St. Louis University, Fordham University, Georgetown University, Spring Hill College and Weston College, and the observatories of the U. S. Coast and Geodetic Survey at Tucson, Ariz., and Ukiah, Calif.

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ETHNOLOGY

Find Indian Tribe Survivors Formerly Thought Extinct

➤ TWO LIVING members of the Lassik, an Indian tribe thought extinct many years ago, have been found by Dr. A. L. Kroeber and Frank Essene, University of California anthropologists. They are both women, named Lucy Young and Mary Major, and they are living with Indians of other tribes on the Round Valley Reservation in Mendocino County. There is no doubt, however, Dr. Kroeber and Mr. Essene declared, that they are of the "vanished" Lassik tribe.

Lucy Young is about 90 years old, and is possibly the oldest Indian in the state. Certainly she is the only one left in Mendocino County who can tell of the ways of her people before they made contact with white men. Discovery of these two Indian women makes possible the recording of ancient tribal culture patterns long since given up for lost.

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MILITARY SCIENCE

Washington First To Urge Uniform for Concealment

➤ GEORGE WASHINGTON "was probably the first general to give serious consideration to a uniform which would be inconspicuous to the point of concealment," states Col. John F. Rowan of the Army Quartermaster Corps (*Quartermaster Review,* July-August).

Washington took special notice of the comparative invisibility of one of the colonial units dressed in buckskin. It was not merely a matter of color, although the natural dun color of the skin garments, perhaps stained with use, did blend into the background far better than the blazing red of the Britishers' coats and the scarcely less conspicuous blue-and-buff of his own Continentals' uniforms. The loose coat, with fringes on its skirt and on the short shoulder-cape, blurred the outline and gave the garment a foliage-like sway when the wind blew.

A loose garment served another great soldier, Marechal Ney, to the probable saving of his life at the Battle of Waterloo. The Marechal wore a great, cloak-like, flowing coat; it was fairly riddled with bullet-holes, yet Ney was not injured. Col. Rowan suggests that its very looseness and floppiness made the distinguished soldier a deceptive target.

"Soldiers fire at fixed shapes, at silhouettes, at figures resembling men," the colonel points out. "Nearly always they look for definite, geometrical proportions. Their visual memory is trained accordingly. They do not see other objects distinctly."

Col. Rowan proposes that advantage be taken of this peculiarity of visual psychology by making soldiers in battle into floppy, loosely draped, vaguely outlined "things of shreds and patches." This naturally is a "horrific" idea to traditionally-minded military men for whom a soldier is not a soldier unless he is trimly and tightly uniformed.

To get around the difficulty, the colonel suggests that a light cotton "patched" pull-over be carried, to be donned before going into action.

Col. Rowan also recommends other breaks with old-time Army traditions. He would substitute rubber or leather cleats for hobnails, which he declares are uncomfortable, noisy and scratchy, besides tending to make the solider's feet cold. He would give up the time-honored long woolen underwear for lighter, double-layered cotton garments. He thinks, too, that a multiple-layered fabric head-pad under helmet or hat would give the Western soldier some of the heat-insulation over his head that the Eastern warrior gets from his turban.

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NUTRITION

Rice Hulls Without Food Value Used for Testing

➤ FOOD WITHOUT nourishment has recently been developed for use in animal experimentation. Like the chemist who makes certain his analytical solutions do not contain the substance he is testing for, the biologist will now have a bulk diet without nutritional value which can be used as a carrier for exact quantities of vitamins, minerals, or other food constituents with which he may be experimenting. The food without nutritional value is prepared from rice hulls, resulting in a fluffy meal consisting of various forms of cellulose, the inert stuff which makes up the solid part of plant structures. Agar, a substance obtained from sea weeds, was formerly used for this purpose but many workers report that it is not nutritionally inert. Furthermore, our main source of supply of agar has now been cut off by our war with Japan.

Science News Letter, August 22, 1942

IN SCIENCE

INVENTION

Air Raid Sirens May Bark To Compel More Attention

➤ AIR RAID sirens that bark instead of howling may be next in the defense equipment of our cities. A Washington D. C., inventor, Harvey C. Hayes, points out in the description of patent 2,292,376 that it is not the length but the intensity of a sound that compels our attention. Accordingly, he plans his siren to be powered with an explosive mixture of gasoline or similar fuel, and to emit a succession of sudden, loud, short noises. The signals can be just the "bangs" of the explosions, or the expanding gases can be sent through a whistle to give brief, loud yelps, or (in his preferred form) they can cause brief, comparably loud blasts from a siren.

Science News Letter, August 22, 1942

ASTRONOMY

Streamlined Navigation Taught 100 in New Course

➤ EXCELLENT progress made by a graduating class of 100 students in a new "streamlined" course in celestial navigation, conducted at Buhl Planetarium in Pittsburgh by Dr. Fitzhugh Marshall, shows that interested persons spending 15 hours in classroom and laboratory practice can acquire sufficient skill to become proficient at navigation. The course given is not abridged. Although it is modernized, nothing is left out.

Results of a thorough objective test, Dr. Marshall explains, show that interested persons can acquire enough knowledge of celestial navigation to be of immediate help in the war effort without having to spend two years passing prerequisite courses, such as mathematics, laboratory science.

All persons completing the course and passing the final examination received the Buhl Planetarium award certifying "proficiency in celestial co-ordinate system, star identification, use of the sextant, use of the air and nautical almanac, and the reduction of observations."

Science News Letter, August 22, 1942

NCE FIELDS

ENGINEERING

Metals Are Strongest When Most Cracked Up

➤ METALS ARE strongest when most cracked up, strangely enough, and the strength can be calculated from the size of the pieces, it is announced in *Nature* by Sir Lawrence Bragg, Nobel prize winner. The pieces, however, are microscopic crystals within the metal which are broken during the hammering, forging and rolling of the metal. Down to a certain limit, the smaller the fragments, the stronger the metal. Once the fragment size has been determined by X-ray analysis, the strength can be calculated. This is the first time that a calculation of this sort has approached success. But agreement with actual tests are still not highly accurate and so far the method can be applied only to yield point of elementary metals.

Science News Letter, August 22, 1942

PHYSICS

Colors of Flag Standard; Length Twice the Breadth

➤ NO LONGER will the flags carried by our ships and soldiers or floating from our government buildings be of various hues and shapes. Rigid federal specifications have been drawn up to insure that all government and military flags shall henceforth be alike. Manufacturers are also applying the specifications to flags for civilian use, although that has not been required.

But it was not so easy as it sounds. The specifications are based on research dating back to 1923, carried out by the National Bureau of Standards in cooperation with the Commission on Fine Arts.

The Commission experimented by making paintings of the flag in various colors and proportions. They brightened up the red and lightened the blue, and made the length twice the width. At last a sample flag was made according to the approved shape and colors and hoisted on a pole at Arlington Cemetery where it was studied under all conditions of lighting, wind and weather. It was enthusiastically accepted.

But then another difficulty arose. The colors were not fast. More research and more experiments. At last the present specifications emerged. The colors are not exactly those originally proposed, but they are close to them, and they are highly resistant to the effects of light and weather on cotton and wool bunting, and meet the needs of the Army and Navy all over the world.

Now the Government has a technical committee on color, established by the Federal Specifications Executive Committee, to handle color problems connected with all fabrics intended for military use, to see that the colors are right at the start and that they stay that way so far as is humanly possible.

Science News Letter, August 22, 1942

AERONAUTICS

Paddle Blade Propeller Increases Plane Power

➤ A WIDE STUMPY PROPELLER blade, nick-named the Paddle blade, has been developed for our airplanes, making it possible to increase the power without increasing the diameter of the propeller. The problem arose, writes Spencer Gregg (*Flying*) when 2,000-horsepower engines were to be used and plane design restricted the diameter to that usually employed for only 1,200 horsepower. The problem was solved by increasing the width of the blade and making it nearly the same throughout the whole length. This made the blade look like a paddle, whence its name. The new design is not pretty but experts believe it will help to make U. S. planes markedly superior to those of the Axis.

Science News Letter, August 22, 1942

ZOOLOGY

Turkeys Destroy Harmful Insects, Eat Much Grass

➤ WILD TURKEYS appear as great destroyers of harmful insects, in a study reported to the *Journal of Wildlife Management* by Paul D. Dalke, W. K. Clark, Jr., and L. J. Korschgen of the Missouri Cooperative Wildlife Unit, with headquarters at the University of Missouri. Turkeys in the Ozark region fed on grasshoppers, stinkbugs, beetles and ants to the extent of 25% of their diet. In the vegetable 75%, grasses, including grass seeds, and acorns were the principal elements.

Science News Letter, August 22, 1942

ENGINEERING

Moisture-Proof Wrapping May Replace Grease on Gun

➤ MOISTURE-PROOF wrappings may soon replace the usual heavy grease coatings to protect guns, ammunition, tanks, planes, and spare parts, from rust and dust during transportation or while awaiting assembly. Many valuable man hours can thus be saved which would otherwise be spent in removing the grease and cleaning the parts. Any World War I soldier who received a grease-coated rifle will appreciate this.

The tough new wrapping material is made by laminating a cellophane film to a light cotton scrim fabric, and impregnating with moisture-proofing materials. The wrapper was developed by the Dearborn Chemical Company of Chicago. The cellophane is made by the E. I. du Pont de Nemours and Company of Wilmington.

The finished machine parts may now be thoroughly cleaned at the factory and then wrapped. The ends of the package may be twisted together or may be sealed by a heat-sealing device. No other protection is needed, the manufacturers state, except a light coating of oil which in many cases need not be removed, or a lump of moisture-absorbing silica gel placed inside the package.

Science News Letter, August 22, 1942

INVENTION

Plastic Stock Replaces Wood in Small Firearms

➤ FORESEEING the rapidly approaching time when there will not be enough hardwood to make all the gunstocks needed for military and sporting small-arms, Marvin Carpenter and Frank T. Green of Chicopee Falls, Mass., have invented a rear stock assembly of plastic, with special arrangements to hold the butt plate firmly in place, yet providing the slight degree of resiliency inherent in solid wood.

The rear stock is hollow, and the butt plate is held in place by rods secured to a metal plate at the front end of it. This in turn is secured by a bolt, under the head of which there is a strong spring. It is this that introduces the necessary modicum of elasticity.

Rights in the patent, no. 2,292,351, are assigned to the Savage Arms Corporation.

Science News Letter, August 22, 1942

MILITARY SCIENCE

Swimming Soldiers

Dripping doughboys take Red Cross swimming course fully clothed and weighted down with equipment of battle. Training is part of preparation for land or sea action.

By FRED A. GRUBE

➤ THOUSANDS of men in the nation's armed forces have mastered swimming and life-saving technique during the past year that once seemed beyond their ability. They acquired aquatic skill, moreover, under obstacles which civilians, learning to swim for recreation, rarely encounter.

It is not likely that the average person will, as a matter of choice, enter water fully clothed or weighted down with the cumbersome equipment of the fighting man. There are elements in army swimming and water safety training, however, which are of distinct value to anyone. The learning process is neither complicated nor does it require a long period to master. If the doughboys can do it, so can you. And in time of emergency, such knowledge is of vital importance.

The development of America's amphibious army has been accelerated by a special training program inaugurated by the American Red Cross at the request of Secretary of War Stimson.

Aquatic training of the army was made necessary by modern combat conditions. World War II has spread soldiers over vast areas in which water often is one of the natural obstacles to be overcome.

Swimming Vital

Soldiers being transported overseas, infantrymen using landing and assault boats and fighting over a terrain sliced by rivers and streams, naval personnel scattered on the seven seas, and airmen forced down on vast wastes of water—their survival may often depend upon their ability to swim or remain afloat until rescued.

Thus, swimming becomes a strategical and tactical problem of modern warfare.

It was to help solve this problem that the army called upon the Red Cross, according to Carroll L. Bryant, assistant national director of life-saving service.

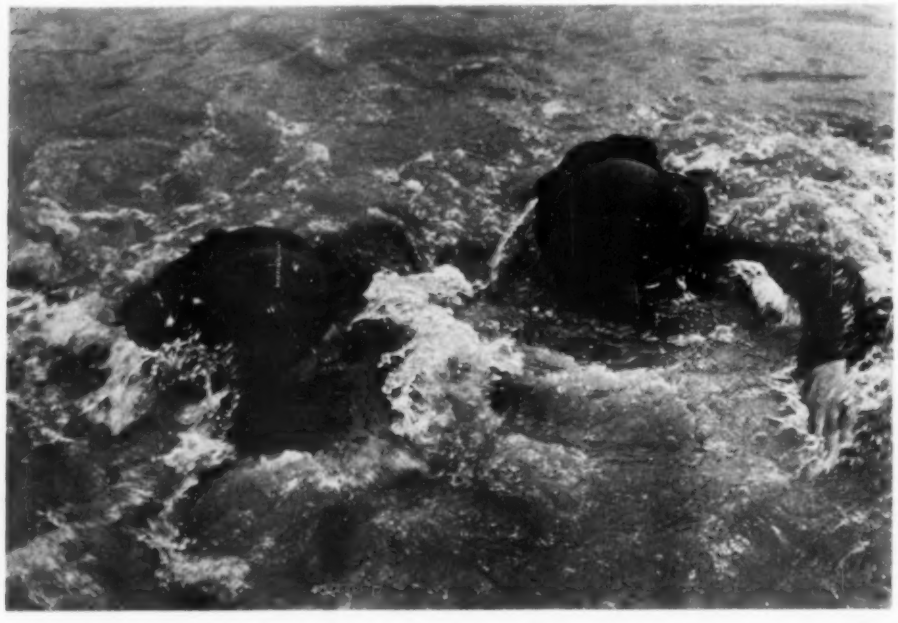
The first requirement was to develop a special training course which would fit into the army's program. This called for the training of a large number of instructors to teach swimming to the army. The Red Cross system of graded courses in swimming, life-saving, and water safety, long available to the public, was adopted.

As a result of experiments, the Red Cross discovered a number of interesting facts. For instance, it found that since the men in the armed forces represented a cross-section of the American people, only one out of ten was a skilled swimmer. The other nine either had no swimming experience or were so limited in ability that they required intensive training.

Lose Fear

For non-swimmers the Red Cross beginner's course was found adequate. This is the same course the Red Cross has taught Americans for almost 28 years. It is the course which has made it possible for tens of thousands of American men, women, and children to lose their natural fear of water and learn to enjoy the recreational and healthful qualities of swimming.

THIS AMPHIBIOUS DOUGHBOY finds the water not so bad after taking the Red Cross army course in swimming.



RED CROSS COURSES help Army men overcome the natural obstacle of water which is present in many combat areas.

THE SOGGY SOLDIER above found that swimming a stream with full equipment was not easy. His buddies, trained in life-saving by the Red Cross, brought him around in no time.

Unlike persons who go to the beach or pool for an afternoon dip, the soldier, under combat conditions, does not change into a scanty bathing suit or trunks. He must be prepared to enter the water fully clothed, wearing heavy shoes and a steel helmet. His clothing may weigh as much as 17 pounds. Add to that a 60-pound pack containing equipment and the army's not-too-light Garand rifle, and you have a good idea of what is meant by an aquatic obstacle.

Air Pockets Help

When the Red Cross first started sending men into the water with full equipment, some would edge over to where the water was shallow—just in case. But they soon learned that air pockets formed in parts of their clothing and that air pockets made the pack something of a float. With the knowledge that they would not be dragged beneath the surface by their clothing and equipment, they lost their fear of deep water.

To make the soldiers mobile in water, a wholly functional training course was adapted from the variety of swimming and diving skills included in the Red Cross courses. Because the effort of lifting a water-soaked sleeve sapped the strength of the swimmers, strokes which brought the arms out of water were eliminated.

Other techniques suitable for ordinary swimming, but exhausting under war conditions, were also eliminated.

There developed from this a type of swimming which required only nine advanced aquatic skills: the breaststroke or sidestroke, using the legs and one arm only; swimming on the back, using the legs only; underwater swimming; swimming and floating within a restricted area; silent swimming; swimming with the head held high through oil and debris; swimming with a splash recovery for navigating through ignited oil; plunge diving; and leaping into the water feet foremost.

This results in a type of swimming as functional as walking or running, and just as easy to learn, if the pupil applies himself. With this sort of training, the value of a soldier is enhanced immeasurably. Even though he may be injured or wounded, a soldier so trained should be able to navigate under most conditions, or at least remain afloat.

Civilians Safer

Civilians, too, would find that their swimming experience would be happier and safer if they sought to swim well rather than fast. They would find their ability in water greatly increased if, instead of attempting to begin their experience with the American crawl stroke, they would first learn the good, old-fashioned breaststroke or the sidestroke, or learn one of the other Army methods as insurance against that accidental ducking which usually happens while fully clothed. And they, like the doughboy, would have mastered a style which could be adapted to meet almost any situation or condition encountered in the water.

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AERONAUTICS

Catapult Land Planes

➤ A PORTABLE, trailer-carried catapult, for launching land planes as similar apparatus on shipboard launches flying boats and pontoon-equipped planes, is the potentially war-useful invention on which U. S. patent 2,292,374 has been granted to Paul G. Hagenbuch of Arlington, Va. It will enable army commanders to launch planes from close behind front lines, the inventor points out, for it will no longer be necessary to find and clear even a small emergency landing field for a take-off run.

Mr. Hagenbuch's invention differs very little from the long-familiar ship's catapult, except that the runway folds in hinged sections for convenience in "march order". It is intended primarily for truck towing, though there is no reason why it should not be mounted on a railroad flat car.

There is no reason, either, why it could not be used in conjunction with a landing field. The latest aircraft carriers in our Navy have catapults as well as runway space on the top deck, so that several planes can be launched at the same time. Similarly, several of these land catapults could be ranged around the sides of a landing field, ready to pop their planes into the air on a few seconds' notice, while others are racing down the runways. It could also be mounted on top of buildings in cities, to send up interceptors.

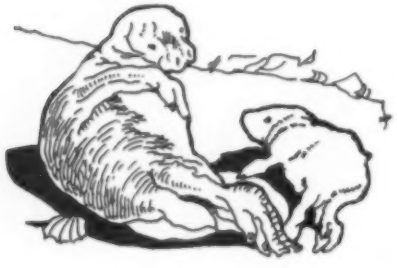
The inventor sees another possibility in the launching of radio-controlled planes or radio-steered aerial torpedoes —craft as yet only in the earliest experimental stages.

He states that the United States government may manufacture and use his patent without payment of royalties.

Science News Letter, August 22, 1942

RESOURCES

NATURE RAMBLINGS
by Frank Thone



Seals in Danger

➤ JAPS on the Pribilof islands, far north of the Aleutians in the Bering sea, would have little strategic importance. The islands are small, without good landing facilities, and too rough-surfaced to afford runways for planes. Seizures already made at Kiska and Attu are more serviceable to the Japs in these respects.

However, the little men from the East can do immense damage to a major American national resource, for these islands constitute the summer home of the great fur seal herd, where the animals mate and the pups are born and learn the ways of the sea. By making even a temporary landing, the enemy could practically wipe out the herd with machine guns and rifles, or even with clubs and knives.

It can be anticipated that the Japs will make such a raid—perhaps have already made it—for they will want all the furs they can steal, in preparation for their anticipated attack on the Soviets in Siberia. And since the fur seals are not Japanese property there need be no scruples on conservational scores.

If a landing should not prove practicable, it will still be relatively easy for the Japs to slaughter the herd from the air with light bombs or machine guns, and thus render the furs useless to the United States. Seals congregate in dense crowds, so hardly a bullet or bomb fragment would be wasted; and of course the poor animals know nothing about taking cover from an overhead attack. Indeed, they are so confiding that the regular method of taking furs is for men to walk among the bunched-up surplus males, or "bachelors", clubbing them over the head.

The seals are exposed to possible attack for a very long time. They arrive at the islands early in June, the last of the pups have been born by the first week in August, and departure takes place in November. The enemy thus has a good five months—and the whole mischief could be accomplished in a few hours. It might even be possible to follow the migrating seal herds in boats, killing them in the water, as was done before the recently abrogated international treaty forbade such pelagic sealing. This, however, would probably be risky, for avenging U. S. planes and destroyers could pounce upon the boats and sink them. A mass raid on the islands while the seals are at the rookeries therefore seems much more probable.

Value of the Pribilof sealeries to the United States is indicated by the size of the fur take. In 1938, last pre-war year, it amounted to about 59,000 hides and this represented only about 2% of the total herd, which was in excess of 1,800,000 animals.

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MEDICINE

Army Health Improves

Massive infections of wounds have been eliminated by use of sulfa drugs. Vaccination prevents yellow fever, typhoid and tetanus. New evacuation methods aid recovery.

➤ MASSIVE infections of wounds among American troops, such as were common during the first World War, are now conspicuous by their absence. Phenomenal results of treatment of Pearl Harbor wounded, dramatically portray the advance of U. S. Army medicine, Major General James C. Magee, Surgeon General of the Medical Corps, points out (*Journal, American Medical Association*, Aug. 15).

"Carefully planned methods of evacuation, the employment of drugs of the sulfonamide group and the administration of blood plasma were the chief features," he explains. "Wounds healed rapidly and cleanly. Less than 4% of the cases of extensive wounds, including compound fractures, became infected even to a mild degree.

"The mortality from perforating wounds of the abdomen, which previous experience had demonstrated to be 80% of all cases, was practically nonexistent. Many men have already returned to duty who would be facing the prospects of long continued hospitalization," Gen. Magee concludes, "if they had not been afforded the benefits of the newest methods of treatment."

The U. S. Army is the first in history to put into effect universal vaccination against dreaded yellow fever. Every member of the Army is also vaccinated against typhoid and paratyphoid fevers, smallpox, and tetanus. And the medical department is prepared to fully immunize the American forces against typhus fever, bubonic plague, and cholera—if and when needed.

A corps of Army experts has visited and studied — often secretly — the preventive medicine and sanitation problems of remote and strange regions where history may decree that the fate of our nation will be decided.

Army doctors face new and difficult tasks never encountered in civilian practice, Gen. Magee points out. But research and organization has provided the U. S. forces with the best protection of health possible under combat conditions.

"The U. S. Army has played a leading role in this field of investigation from the earliest days," Gen. Magee states, "and, as a result, some of the greatest advances in medical knowledge in preventive medicine have been contributed by medical officers of our Army."

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● RADIO

Saturday, August 29, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Gregory Bateson, of the American Museum of Natural History, will discuss Human Dignity from a Scientific Viewpoint.

Tuesday, August 25, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.

ASTRONOMY

Pronouncing Star Names

After consultation, American Astronomical Society adopts standard pronunciation. Includes 88 constellations, 50 stars and nine planets.

➤ YEARS of confusion in pronouncing astronomical names may now come to an end. Often when referring to a star or constellation that he used in navigating his craft through the air or over the sea, the aviator or mariner has given the name such an unfamiliar twist that the astronomer has had to think twice to realize the object meant. Now, however, the American Astronomical Society has adopted officially a new list of pronunciations.

Prepared, after consultation with teachers and others interested, by a committee consisting of Dr. Samuel G. Barton, of the Flower Observatory of the University of Pennsylvania (chairman); George A. Davis, Jr., of the Buffalo Museum of Science, and Daniel J. McHugh, C.M., of De Paul University, Chicago, the complete list appears in the August number of *Popular Astronomy*. It includes the 88 constellations used by astronomers, fifty important special star names, the nine major planets, three clusters of stars and the letters of the Greek alphabet. The latter are often used by astronomers. Thus, the brightest star in the constellation of Orion is called alpha Orionis.

The special name for this star is "Betelgeuse," but it has had a variety of pronunciations, even in astronomical circles. One is *bet*-el-gerz, another beh-*tell*-gyou-eez and another "beetle-juice." The committee decided on *bet*-ul-jyuz. The first syllable is accented. The second syllable is pronounced like the el in "angel," and the u in the third syllable has the same sound as in "emulate."

The bright star Aldebaran in the constellation of Taurus the bull which, like Orion, is seen to the south on winter evenings, is often called al-deh-*ba*-run by navigators. The last two syllables are pronounced the same as "baron." Dr. Barton's committee adopted al-*deb*-a-run. The third syllable is pronounced like the a in "abound" and the last like the a in "sylvan."

For Cassiopeia, the W-shaped constellation seen in the northeast these August evenings, *kass*-ee-*ope*-ee-yuh has often been used, but they recommend *kass*-ih-oh-*pee*-yuh. The a in the first syllable is like that in "hat," the i in the second as in "bit," the o in the third as in "anatomy," the e in the fourth as in "be" and the a at the end as in "sofa." The first and fourth syllables are accented.

Planet names are also covered. Most of these are familiar, but Uranus has been subject to variation. Thus, you-*ran*-us is sometimes used. Now, it has been decided, this should be *u*-ra-nus. The a in the second syllable is as in "abode" and the u in the last like that in "circus."

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PSYCHIATRY

Crime and Delinquency Prevented by Clinic

➤ PREVENTION of crime and delinquency, successful treatment of "problem" and backward school children, and the early detection and prevention of serious mental disorders have resulted from the pioneer work of the Suffolk County Health Department of New York, in setting up a mental hygiene program for rural areas.

An encouraging report of its first year's work is given by Dr. George M. Lott, Director of the Suffolk County Mental Hygiene Division, the first of its kind to be organized by a county health department. Dr. Lott's report appears in *Public Health Reports* of the U. S. Public Health Service.

In its work of prevention, the Suffolk County Mental Hygiene Clinic serves as a sort of classroom for parents and teachers, and a conference room, as well as a clinic. When a problem child is referred to the Clinic, for instance, his teachers, his family doctor, the school nurse, and anyone else interested in his welfare may all meet together and plan a cooperative program of treatment.

This method is not only valuable to insure cooperation among the various people and agencies involved in a case, but it provides a program of education in the principles of mental health. Relatives, teachers, physicians and clergymen who participate in these conferences with the psychiatric workers of the Clinic have much to contribute to, and learn from such a many-sided discussion of each case.

Several cases of "delinquent" boys are reported by Dr. Lott where such prompt cooperation and treatment undoubtedly saved them from reform school or jail. One group of adolescent troublemakers caught by the police were easily dealt with individually, once it was discovered that their leader belonged in a school for the feeble-minded. The others were given special educational or home-guidance attention.

The importance of re-educating parents is illustrated in several cases where a normally intelligent child was failing in school. One little girl was unable to read because she had been tutored at home by an over-ambitious strict and impatient father.

A seven-year old boy was failing in the first grade because of an abnormal amount of "babying" and spoiling at home, interspersed with unjust punishments. The mother, while not able to change her attitude without thorough-going psychiatric treatment, was nevertheless receptive to advice, and the situation was much improved.

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Ten per cent uncured tire *scrap rubber* in Army service shoes will take the place of crude rubber formerly used for composition soles.

Homing pigeons carried by RAF planes are released with a message giving the plane's exact position when pilots are forced down on the sea.

LEARN SPANISH
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CHEMISTRY

Fluorescent Raft Signal

Chemical dyestuff glows brightly leading rescuers to a wrecked plane. New solution keeps film on surface despite rough weather. May also be used in life boats.

➤ AN UNUSUAL method of signaling from life-rafts has found important use in the war. A flask of uranine, a brilliantly fluorescing dyestuff which glows bright yellow in sunlight as well as in ultraviolet light, is attached to the rubber raft used by aviators.

When forced down in open water the airmen open the valve on the flask and a large amount of concentrated uranine solution is released over the surface of the water. Glowing strongly in the sunlight, it attracts the attention of pilots who may be flying high overhead.

As would be expected, the yellow spot on the blue or green water provides a convenient means for signaling aircraft on a sunlit day. However, certain faults in the method have appeared, and although they have not yet been remedied, a recent development promises to increase the chances of being safely rescued for those on such a raft.

A new solution has been prepared which assures rapid distribution of the dye over a large area without the loss of particles or globules containing the dye by sinking. The new composition disperses the uranine regardless of rough weather and tends to form a thin film which keeps most of the dye near the surface where it can be seen.

The liquid base which quickly disperses the uranine over the water consists of four organic chemicals (dibutylamine, dibutyl tartrate, dibutyl ether, and acetone) in the correct proportion so that dispersion occurs. Each substance plays a definite role in preventing the formation of globules which sink; keeping the alkalinity high so that fluorescence is at its best; and maintaining proper viscosity and surface tension. The uranine is not dissolved in the base but is suspended as very fine particles.

The new fluorescent signal need not be limited to life rafts. Individual life preservers, life-boats, and so on, may be equipped with these flasks, the signal being released when a plane or ship approaches.

Science News Letter, August 22, 1942

MEDICINE

Vitamin A Combats High Blood Pressure in Dogs

➤ VITAMIN A in massive doses counteracts high blood pressure in dogs, caused by lack of function in the kidneys, Dr. G. E. Wakerlin, Dr. W. G. Moss and Dr. E. L. Smith of the University of Illinois College of Medicine report (*Science*, Aug. 14). This gives experimental support to earlier clinical observations, which indicated blood pressure reducing properties on the part of vitamin A.

In carefully controlled laboratory procedure, the three scientists put the kidneys of five dogs out of action, so far as control of blood pressure was concerned. The dogs survived the operation perfectly and remained well, with hearty appetities, except for the rise in blood pressure.

After several months, three of the dogs were given massive daily doses of vitamin A in sesame oil. The other two were given "blank" doses of the oil containing no vitamin. The blood pressure of two of the vitamin-treated dogs soon returned to normal, and that of the third dog to a little above normal. The untreated, "control" dogs remained in a state of high blood pressure.

The three experimenters announce their intention to continue their study on a larger scale, and also to determine the possible pressure-reducing effects of other compounds chemically related to vitamin A.

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ENGINEERING

Plastics Given Exercises To Test Fitness for Use

➤ AUTOMATIC machines bend plastic materials back and forth at speeds ranging from a slow wave to a singing vibration to test their fitness for airplane parts and for other uses subject to vibration.

When the specimen breaks, the machine automatically stops and the number of vibrations administered up to the moment of the break is recorded. An important result of the tests was the disclosure that the rate of vibration has an important influence on the number that can be withstood.

These and other tests on plastics have been carried out for the past two and a half years at the University of Illinois under the direction of William N. Findley, backed by more than 25 years experience of the engineering staff in putting metals through similar tests. The results are used by the American Society for Testing Materials to designate standard methods of testing plastics.

In another test, specimens hang along a wall of the laboratory with weights attached, and the stretch or "creep" is measured with microscopic fineness for periods of time from a day up to as much as a year.

These long-time "fatigue" or endurance tests are of extreme importance for the safety of our fighting men and civilian workers, for a piece will fail under oft-repeated or long-continued stresses much smaller than it could withstand for a short time. It is necessary to know how long a piece can be used or abused.

Science News Letter, August 22, 1942

Alaska produces half the world's *salmon* pack.

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ETHNOLOGY

Study Islander Ideas

Bismarck Archipelago group are not so superstitious. Not "animists," but believe evil spirits take up residence in a particular spot until killed. "Kot" can be exorcised.

➤ NATIVES of the Bismarck Archipelago, South Sea island group at present occupied by Japan, are not the simple, superstitious folk they are often credited with being, declares Rev. Joseph Meier, M.S.C., of Sacred Heart Monastery, Bernharts, Pa., who once lived among them as a missionary. In the anthropological journal, *Primitive Man* (July-October), Father Meier tells of some of their ideas about the spirit world.

They do believe in spirits, Father Meier states, but they definitely do not think that every tree, rock, mountain and other natural object has a spirit in it. That is, they are not "animists". An evil spirit (called a "kot") may take up residence in a particular spot, but can be driven out or even killed.

Father Meier tells how such a "kot" was once exorcised with so prosaic a means as a gunshot, from the weapon of a companion on an expedition.

He and his companion, a lay brother from the mission, were going up a trail together with a party of natives. At one point, the natives began to make a detour because, they explained, a "kot" had taken up residence in a certain cave where there was a well, and had killed a woman going there to get water.

Father Meier told the natives he would have his companion expel the "kot" with his gun. Partly reassured, they followed—but he noticed that the party got thinner and thinner. They had all dropped out and were hiding behind trees. At last he and the lay brother were quite alone.

"I told my companion to shoot into the cavern. He did so, and a loud detonation followed which all the hiding natives could hear. Immediately after the shot, I called as loud as I could, 'Come on, boys, now. The well is clear and so is the path. Don't be afraid. You see, nothing has happened to me or my companion. The "kot" is gone.'

"The natives now approached from all sides. A cloud of smoke and a penetrating smell of powder were issuing from the cavern. Obviously the 'kot' was not only shot but smoked out of the cavern and driven out by the strange odor. Some loose stones, too, had fallen from the top and sides of the cavern into the water and this was another unmistakable sign that the 'kot' had fled. All previous awe of the natives for that well was now charmed away."

The natives of the islands, Father Meier says, have a rather good knowledge of human anatomy. This he attributes in part to their former cannibalistic practices. They had the curiosity to examine their victims while they were cutting them up for cooking. They even have a knowledge of comparative anatomy, studying the internal organs of animals killed for food and comparing them with their own.

Science News Letter, August 22, 1942

PLANT PATHOLOGY

Beetle Carriers of Fungus Active; No Aid for Elms

➤ A REAL threat from a foreign enemy that invaded our shores some years ago and is now pretty well entrenched is the danger to the elms in ever-widening radius around New York City from the fungus plague that has been misnamed Dutch elm disease. It didn't come from the Netherlands but from Central Europe.

Due to war-time economies in appropriations, and in particular to the dissolution of the C.C.C. and drastic cuts in the number of W.P.A. workers, it is not possible for public agencies to do any work within the area known to be infested. All that is being done this summer is scouting along the edges of the infested region, to find any new spreads of the disease.

The beetles that disseminate the fungus are breeding, flying and getting into new trees now, and they will be at their most active during all of August. Since federal aid in the elm disease campaign is lacking, local communities and private individuals who value their elms will have to look out for themselves this season.

Science News Letter, August 22, 1942

some real antiques

Would you like to own some real antiques? Not American Colonial, not Medieval, not even ancient Greek, Roman, or Egyptian, but something prehistoric?

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· New Machines and Gadgets ·

❁ *MERCURY, 99.99995% PURE, is required for huge power rectifiers that convert alternating to direct current for refining of aluminum, magnesium, copper and other strategic metals. This high degree of purity is obtained by treating the mercury for 15 hours with nitric acid to remove the base metals, and then distilling under a vacuum (which keeps the oxygen away) to remove the silver and gold and all other foreign substances. One company alone is producing half a ton daily of the highly purified metal.*

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❁ *AN ELECTRICALLY HEATED CARBON TIP replaces the old copper soldering iron and speeds up the process of soldering resistance wires in a regulator for motors or generators. The carbon tip is lowered into contact with one of the several buttons to which the wire is to be attached, the button is quickly heated and the solder applied. The operator then turns the plate by foot lever to bring other buttons into position for soldering. This arrangement saves time-out for cleaning the old copper soldering iron (See photograph).*

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If you want the sources of the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 118.

❁ *A MERCURY BOMB EXPLODES inside a fluorescent lamp during manufacture, providing the exact amount of mercury vapor needed, saving 50% of the mercury formerly used and producing a better lamp, it is claimed. The old method of dropping the mercury in from a dispenser wasted much of the liquid metal. Some lamps got too much, some too little. Many lamps had to be rejected. Mercury is a critical war material completely banned in many industries.*

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❁ *PHOTOGRAPHIC MISTAKES* are *well-nigh impossible with an automatic camera designed primarily for medical use in taking color pictures of body cavities, such as the eyes, mouth, throat and other cavities that are accessible from without. But it can also look through the spark plug opening into the cylinder of an airplane engine, or keep a record of the instrument board. Light is provided by a 1750 watt bulb and reflected through appropriate tubes to the cavity. For each type of picture a special "key" is provided which sets the distance of the object from the lens, the focus, the diaphragm and the amount of light. After the flash is made, the button cannot again be pressed until after the film has been moved.*

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Glances At New Books

➤ FUNDAMENTAL FACTS about raw materials and their place in peace and war is told in STRATEGIC MATERIALS AND NATIONAL STRENGTH by Dr. Harry N. Holmes, president of American Chemical Society, (*Macmillan*). If we had paid attention to the warnings of our scientists, we would have stock-piled many important materials before the war. Once we get through with this war, he advocates a strategic materials advisory board to see that the job is done.

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➤ WITH OUR EYES constantly on our own troubles, we are apt to assume that only American coastal waters are overfished; but the problem really is acute in all waters contributory to markets serving large populations. It was therefore fitting that an Englishman should come to this country to talk things over: THE OVERFISHING PROBLEM by E. S. Russell (*Macmillan*), is a record of a course of lectures at the Johns Hopkins School of Hygiene.

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➤ DRAFTERS OF BLUEPRINTS for a new world when peace comes will want to check their sketches with the outline given in Stuart Chase's THE ROAD WE ARE TRAVELING (*Twentieth Cent. Fund*). It is an illuminating summary of whence we have come socially and whither we are likely to go. Recommended reading between headlines these troubled days.

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➤ A FULL PICTURE of the flora of one of the most interesting xeric areas of the world is contained in FLOWERING PLANTS AND FERNS OF ARIZONA by Thomas H. Kearney, Robert H. Peebles and collaborators (*Govt. Printing Office*). Outstanding, of course, are the 76 cactus species; except for Texas, no other state has so many. The 30 good halftone plates furnish glimpses of ecological backgrounds and species habits.

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• Just Off the Press •

GUIDES TO THERAPY FOR MEDICAL OFFICERS — U. S. War Department — *Govt. Print. Off.*, 185 p., 25c. (Technical Manual, 8-210).

HOW RUSSIA PREPARED, U. S. S. R. BEYOND THE URALS—Maurice Edelman—*Penguin*, 127 p., 25c.

LEARNING THE RADIOTELEGRAPH CODE—John Huntoon — *American Radio Relay League*, 34 p., illus., 25c.

MATHEMATICS OF MODERN ENGINEERING, Volume II (Mathematical Engineering)—Ernest G. Keller—*Wiley*, 309 p., $4.

NUTRITION AND THE WAR — Geoffrey Bourne—(2d ed. rev. & enl.) — *Cambridge (Macmillan)*, 148 p., $1.50.

THE OVERFISHING PROBLEM—E. S. Russell *Cambridge (Macmillan)*, 130 p., charts, $2.

RADIO CODE MANUAL—Arthur R. Nilson—*McGraw-Hill*, 174 p., illus., $2.

YOUTH LOOKS AT SCIENCE AND WAR — Science Talent Search Trip Winners — *Science Service and Penguin Books*, 133 p., 25c.

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